mini-
BRUTE

STAR BLAZER

- FUTURISTIC APPEARANCE
- CREW COCKPIT
- PAYLOAD SECTION

SKILL LEVEL 3

1–Beginner 2–Intermediate 3–Craftsman 4–Advanced 5–Expert

SPECIFICATIONS

Length	11.5" (29cm.)	Weight	0.73 oz. (21g.)
Body Dia.	0.736" (18.7mm.)	Parachute	Recovery

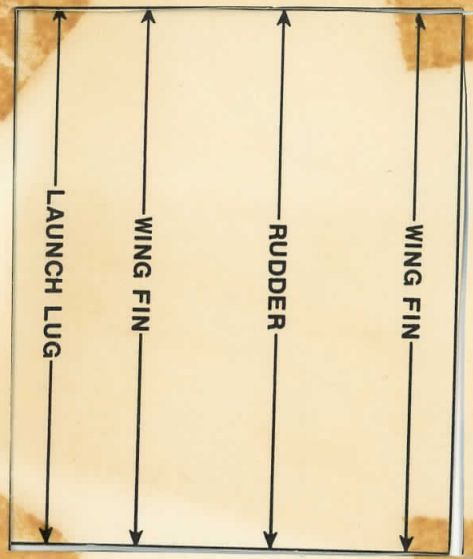
RECOMMENDED ENGINES

1/4A3-2T 1/2A3-2T A3-4T

Use 1/2A3-2T for first flights. Engines and launcher not included.

TK-31
#0831

ESTES INDUSTRIES
PENROSE, COLO. 81240



ESTES®
A SUBSIDIARY OF DAMON

SP-T31

STAR BLAZER

82,304

ESTES®

A SUBSIDIARY OF DAMON

Flying Model Rocket

Recommended for ages 10 to adult.

FLY ESTES

Model Rockets

A Rewarding Hobby for Ages 10 to Adult.

ESTES INDUSTRIES
PENROSE, COLO. 81240

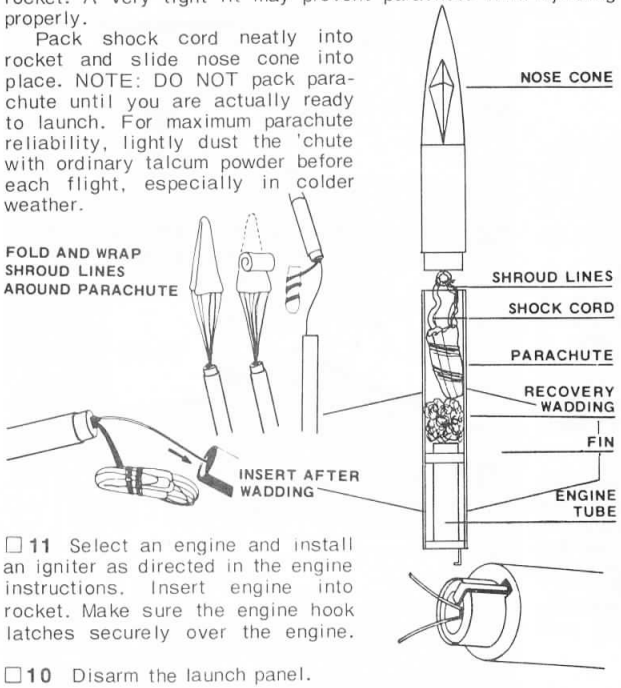
☐ **14** Apply two or more coats of sanding sealer to all balsa surfaces. Sand lightly with extra fine sandpaper between coats. Repeat until smooth. Give the rocket a spray base coat of white and follow with your choice of colors.

COUNTDOWN CHECKLIST

☐ **12** Pack two squares of loosely crumpled Estes RP-1A recovery wadding into body tube.

Fold the parachute into a triangular shape. Roll 'chute tightly as shown and wrap shroud lines around it. If 'chute is too large, unroll and repack until it slides easily into the rocket. A very tight fit may prevent parachute from ejecting properly.

Pack shock cord neatly into rocket and slide nose cone into place. NOTE: DO NOT pack parachute until you are actually ready to launch. For maximum parachute reliability, lightly dust the 'chute with ordinary talcum powder before each flight, especially in colder weather.



☐ **11** Select an engine and install an igniter as directed in the engine instructions. Insert engine into rocket. Make sure the engine hook latches securely over the engine.

☐ **10** Disarm the launch panel.

☐ **9** Lower the rocket into position on the launch rod or rail. Clean the micro clips, then clip one to each lead of the igniter. The clips must not touch each other and the igniter leads must not cross. The rocket may be supported with a scrap of wood or an empty engine casing to make it easier to attach the clips and to keep the clips from touching the blast deflector plate and short circuiting.

☐ **8** Clear the launch area, alert recovery crew and trackers.

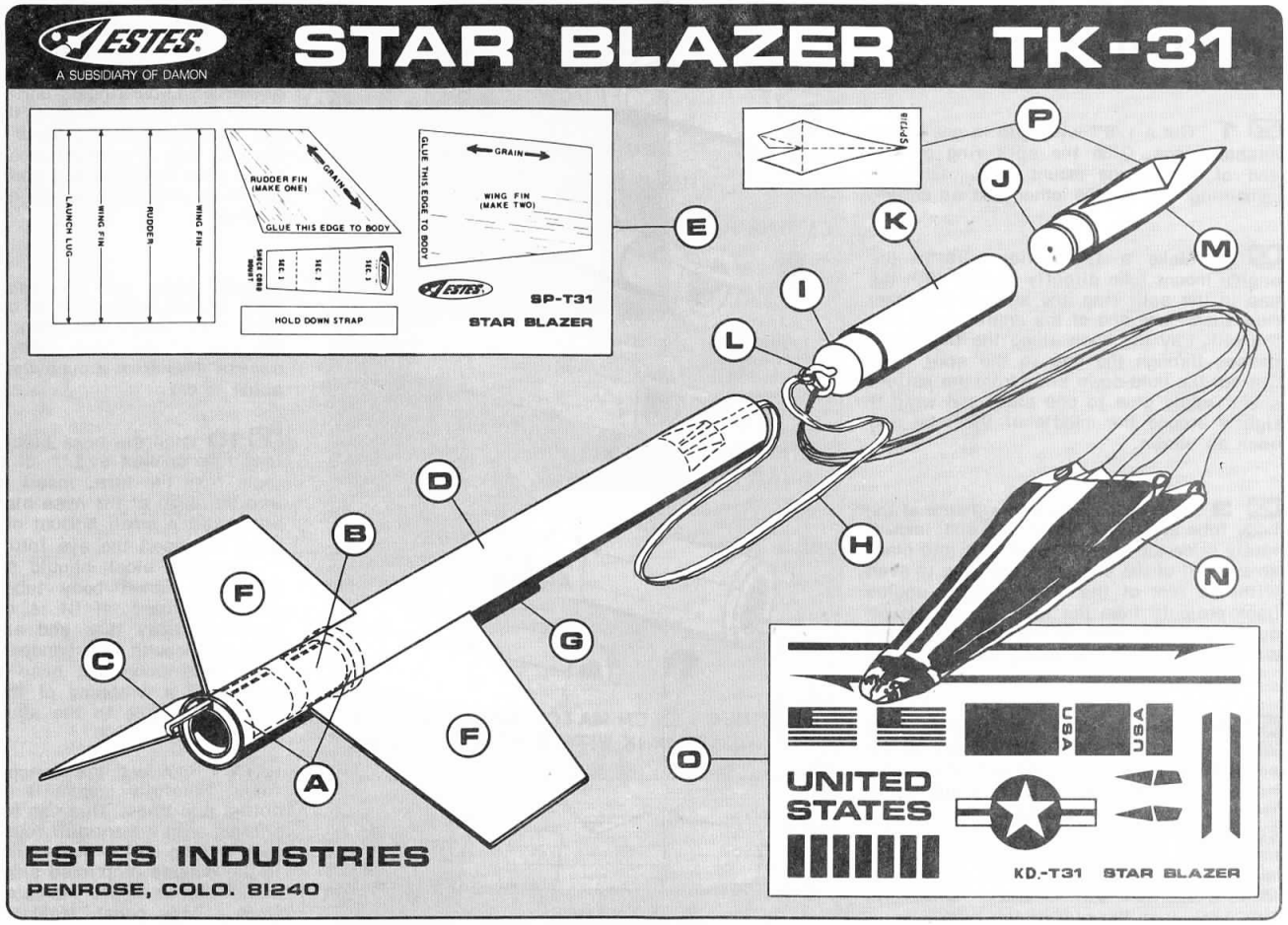
☐ **7** Check for low flying aircraft and unauthorized persons into recovery area.

☐ **6** Arm the launch panel.

-5 -4 -3 -2 -1 LAUNCH!!

MISFIRE PROCEDURE

Occasionally the igniter will heat and burn in two without igniting the engine. This is almost always caused by a failure to install it correctly. Disarm the launch panel, remove the model, clean the igniter residue from the nozzle, and install a new igniter. Follow the launching procedure again.



PARTS LIST

A.	2	Adapter Rings	AR-520
B.	1	Engine Mount Tube	BT-5T
C.	1	Engine Hook	EH-3
D.	1	Body Tube	BT-20D
E.	1	Pattern Sheet	SP-T31
F.	1	Balsa Fin Stock	BFS-20
G.	1	Launch Lug	LL-2A
H.	1	Shock Cord	SC-1
I.	1	Nose Block	NB-20
J.	1	Nose Cone Weight	NCW-1
K.	1	Payload Tube	BT-20M
L.	1	Screw Eye	SE-2
M.	1	Nose Cone	BNC-20N
N.	1	Parachute	PK-10R
O.	1	Decal	KD-T31
P.	1	Canopy	SP-T31B

ADDITIONAL MATERIALS

In addition to the parts included in this kit you will need scissors, white glue, a sharp model knife (or single edge razor blade), masking tape and paint or dope.

Check to be sure your kit is complete, then read the entire instructions before beginning to assemble your rocket. Check off each step as you complete it.

ASSEMBLY INSTRUCTIONS

☒ **1** Cut a 1/8" wide gap in one of the adapter rings. Glue the split ring on one end of the engine mount tube. Glue the remaining ring on the other end as shown.

☒ **2** Make a 1/8" wide slit in the engine mount tube directly in line with the gap in the split ring and against the other ring. Insert one end of the engine hook into the slit. Lay the hook along the tube so it passes through the gap in the split ring. Cut out the hold-down strap from the pattern sheet, apply glue to one side, and wrap it tightly around the middle of the tube and hook as shown.

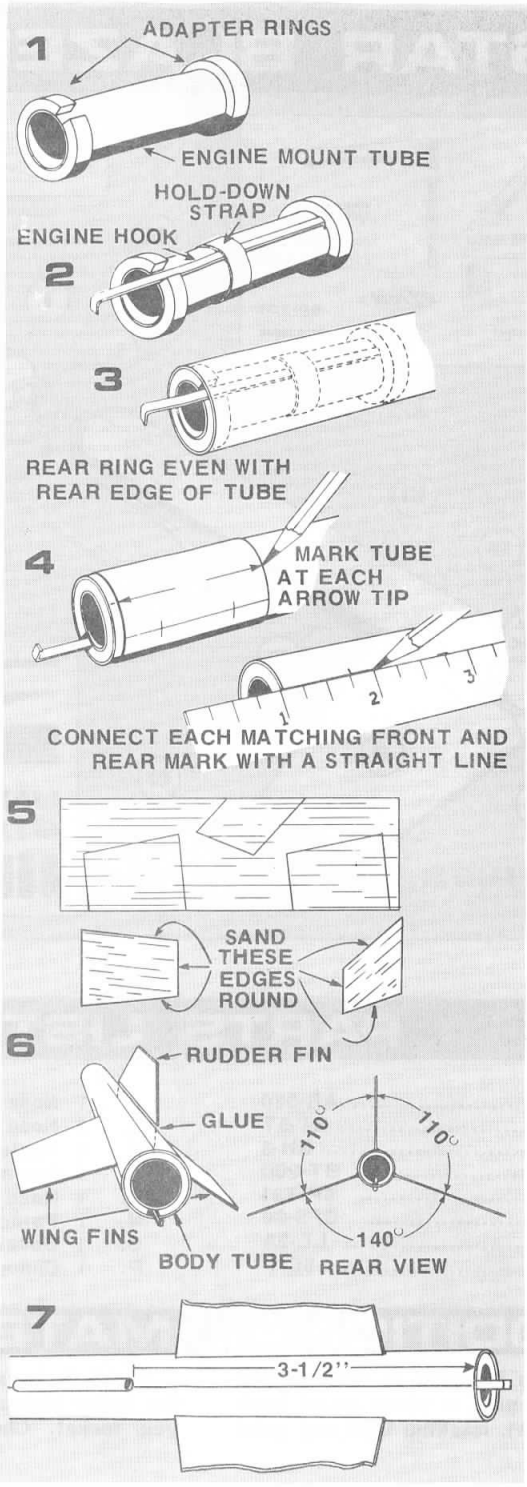
☒ **3** Smear glue around the inside of the body tube about 3/4" from one end. Immediately slide the engine mount unit into place so the end of the engine mount tube is even with the rear of the body and the engine hook projects from the tube. Do not pause during this operation or the glue may stick with the mount in the wrong place.

☒ **4** Cut out the body tube marking guide. Wrap it around the rear of the body so the ends of the guide are in line with the engine hook. Mark the tube at each arrow point. Remove the guide and draw a straight line connecting each matching front and rear mark. Draw the launch lug line so it reaches about four inches from the end of the tube. Make a position mark on each "wing" fin line 3/4" from the rear of the tube.

☒ **5** Cut out the fin pattern. Trace their outlines on the balsa sheet as shown. Cut out the fins carefully and sand the edges as illustrated.

☒ **6** Rub a priming coat of glue into the root edge of each fin and allow to set. Glue the "rud " fin on the rudder line so its rear is even with the end of the tube. Glue the "wing" fins on the wing lines so the rear of each wing is on the mark you made in Step 4. Align the fins straight away from the tube and allow to set. Apply a glue fillet to both sides of each fin joint after the glue is completely dry.

☒ **7** Glue the launch lug to the body on the lug alignment line as shown, 3-1/2" from the rear of the tube. Make sure the lug is perfectly straight on the body.



☒ **8** Cut out the shock cord mount. Prefold it on the dotted lines. Apply glue to section 1 and lay the shock cord as shown and fold over again. Clamp the unit together with your fingers until the glue sets. Apply glue to the inside of the body tube at the front over an area about 1" to 1-3/4" from the end. The glued area should be the same size as the shock cord mount. Press the mount into the glue and hold it until the glue sets.

☒ **9** Make sure the back of the nose cone is flat. Smear glue on one side of the nose cone weight and press it tightly onto the rear of the nose cone. Wipe off any excess glue from around the edge and set aside to dry.

☒ **10** Glue the nose block into the payload tube so that 1/2" of the block projects from the tube. Insert the screw eye into the base of the nose block. Remove it and squirt a small amount of glue into the hole. Re-insert the eye into the hole.

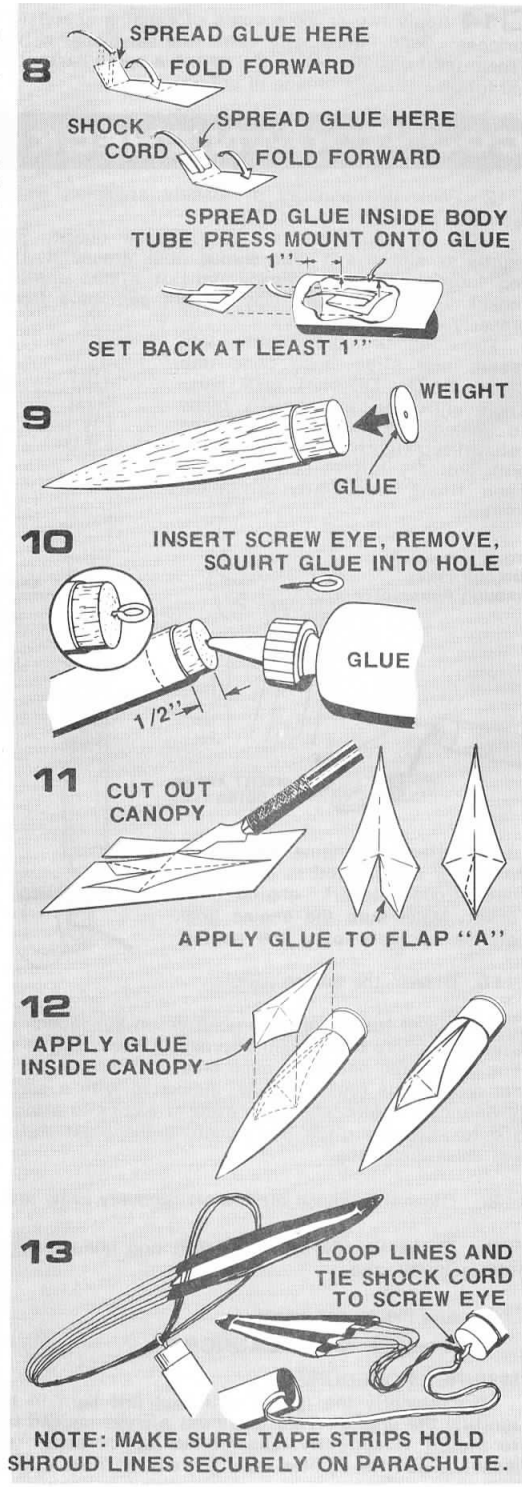
The nose block should separate easily from the rocket body tube, but not be extremely loose. If fit is too tight, sand inside of body tube end and shoulder of nose block with fine sandpaper.

If nose cone and nose block are too loose add a wrapping of transparent tape or masking tape to the shoulder of each.

☒ **11** Cut out the canopy on its edge lines. Carefully crease it exactly on the dotted fold lines. This can best be done by scoring with a very dull rounded blade and then folding on the scored line. Apply glue to the outside (unprinted side) of flap "A" and stick this to the inside of the matching front canopy panel. Hold this joint until the glue sets.

☒ **12** Apply a line of glue to the inside of the canopy all around the edges. Matching the rear of the canopy to the shoulder of the nose cone, set the canopy in place so it is straight on the cone. Press down all edges securely. Hold the canopy in place until the glue sets.

☒ **13** Locate the center of each shroud line on the parachute. Fold the shroud lines at this center and poke them through the screw eye for about three inches. Make sure the tape discs hold the shroud lines securely on the parachute. Open the lines up into a loop on the other side of the screw eye, pass the parachute through this loop, and pull tight. Apply a spot of glue to the lines where they knot around the screw eye. Tie the free end of the shock cord to the screw eye and insert the nose cone in the front of the payload section.



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